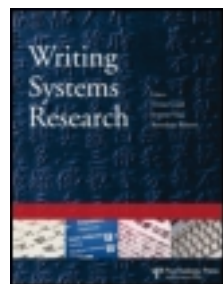


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Devanagari's descendants in North and South India, Indonesia and the Philippines

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Devanagari's descendants in North and South India, Indonesia and the Philippines

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Several scripts in northern and southern India, Indonesia and the Philippines developed from informal varieties of Devanagari restricted to intimate, shorthand-like uses by members of mercantile occupations. The mercantile varieties took a characteristic quasi-abjad form with postconsonantal vowels unspelt. This paper follows the development of these scripts, demonstrating how they gave rise to the new scripts in South India, Indonesia and the Philippines. The basic relationships between these scripts are demonstrated with cursory descriptions of their structural correspondences, followed by a discussion for each of the ways the orthographic system changed back to a more classic abugida as a result of borrowing from prestige contact scripts or innovations in the use of existing resources. In addition to these more typical phenomena, we describe some quirky spelling conventions in Sumatran, Sulawesi and Philippine scripts, tracing them to practices used to teach combinations of vowel and coda signs on consonant letters.

Keywords: Macro-Devanagari family; Vowels; Coda consonants; Quasi-abjads; Underrepresentation; Sociolinguistic factors; Register; Contact; Borrowing.

The relation between a script and the language(s) it encodes is mediated by various factors. Although a fairly direct mapping between graphemes and corresponding phonological units (segments, morae, syllables) may be the ideal, this can be overridden or partially determined by sociolinguistic factors such as orthographic conservatism or register-based simplification. Over time, Devanagari was adapted in various ways to write languages other than Sanskrit, thereby losing some or most of its characteristic orthographic features. The least drastic change involved contextual partial loss of the default /a/ reading due to changes in syllable structure in modern languages. The most extensive changes resulted in a group of closely related script varieties in North India named after particular mercantile professions: *Mahājanī* (banker, money-lender), *Vāṇiāī*, *Baniauṭī* (shopkeeper), *Sarrāṭī*

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(banker). Not only were the shapes of letters drastically simplified, but the scripts were a kind of shorthand in which only syllable-initial vowels were written, using existing independent vowel letters, and postconsonantal vowels were typically omitted. Although these were similar in most respects to consonantal abjads (cf. Hebrew, Arabic), the existence of several dedicated vowel letters distinguishes them from the abjad prototype: for this reason I will refer to this script type as a *quasi-abjad*.

This paper traces the development and spread of various descendants of Devanagari in India itself and through Indonesia and the Philippines. The argumentation is in two parts. The core theme addresses the orthographic adaptations and changes undergone by each script and their relation to sociolinguistic phenomena. Since the primary interest of these processes is in their relation to preceding stages of the script and ultimately to classical Devanagari itself, each section of this paper begins with a summary of the formal changes that gave rise to each new script.

The paper is divided into two main headings: scripts used in India proper, and scripts that developed in Indonesia and the Philippines. Within each main heading, each script or set of related scripts is treated in its own subsection.

DEVANAGARI AND ITS DESCENDANTS

Devanagari is the best known and most widespread of Indic scripts, yet it is less well known that it has a surprising variety of descendants. Several are or were used in northern India, but others were used in the south (mainly Tamil Nadu), in Indonesia and the Philippines. Devanagari's better-known North Indian descendants include Gujarati, Moḍi (Grierson, 1905) and Kaithi, used throughout much of the north and northeast (Grierson, 1881). Closely related to Kaithi is Sylhet Nagari of north-eastern Bangladesh (Lloyd-Williams, Lloyd-Williams, & Constable, 2002). Each of these scripts is or has been used for official and/or literary purposes in the past. Another set of varieties formerly widespread in northern India are the mercantile group of quasi-abjad shorthands (Grierson, 1881; Kellogg, 1876). The similar Laṇḍā quasi-abjad of Punjab is separately descended from Śāradā (Grierson, 1916; Pandey, 2010).

Among the Indic scripts in India and island Southeast Asia are a number whose origins have long been unclear. The development of the major scripts of India, and of the Javanese-Balinese and Sundanese scripts in Indonesia, can be traced with a high degree of certainty through a nearly unbroken line of texts on stone, copperplate, palm leaf and other less permanent media (de Casparis, 1975). For other scripts, few to no intermediate records have been uncovered that would link them definitively to any earlier script, and they have generally been assumed to descend from the same ancestor as other scripts of their region, or simply invented. These include two distinct indigenous scripts used among the Sourashtran-speaking community¹ in Tamil Nadu, and a group of scripts formerly widely used in Indonesia and the Philippines.

¹Several variant spellings are encountered for the name of this community and their language and script. In Randle (1944) and other literature from outside India, *Saurāshtra(n)* is most common, with or without the macron. In Indian sources, however, the language is referred to as *Sourashtra(m)*, and *Sourashtrian* is usually used for the name of the people and the corresponding adjective. In this paper I have retained the general convention begun by Randle but with an <o> as the second letter, in order to avoid confusion with the Saurashtra peninsula of western Gujarat.

NORTH INDIA: GUJARATI-KAITHI CONTINUUM, MODI AND MERCANTILE SHORTHAND VARIETIES

Devanagari is a typical Brahmic script: apart from several letters for syllable-initial vowels, the majority represent individual consonants that are pronounced by default with [ə], [a] or [ɔ] depending on the language, and other vowels are overtly spelt with dependent vowel signs above, below or on either side of these base consonant letters, forming orthographic syllables known by the term *akshara*.

Compared to Devanagari (see [Figure 1](#)), most of its North-Indian descendants lack a headstroke integral to the shapes of the letters. Other than modern Gujarati, these scripts tend either to draw a line from which the letters appear to hang, or to omit the headline altogether (Grierson, 1881; Pandey, 2011); in older Gujarati texts, cf. numerous annotations in Avestan scriptures (<http://www.avesta-archive.com>), the same practice of hanging letters from a ruled headline is common.

The headstroke survives in a reduced form in many letters, often as an initial serif-like tick or curl. This is especially noticeable in Gujarati and less so in the other scripts; in older Gujarati texts, some letters (and <d> in particular; see [Figure 1](#)) still bear an initial tick that has since disappeared.

In general, the letters in Devanagari's North-Indian descendants are recognisable as simplified versions of their Devanagari equivalent. The most atypical North-Indian script is Modi, which appears to form a southern group together with two Sourashtra scripts discussed below: unlike the others, these scripts tend to join the body of the letter to the bottom of the right-hand stem instead of the top.

ORTHOGRAPHIC CHANGES

Grierson (1908) notes that script varieties used across northern India for semi-formal purposes were similar enough to be considered regional varieties of a single script, saying (p. 338) that Gujarati script “closely resembles the ordinary Kaithī character employed all over Northern India”. However, varieties for informal mercantile record-keeping and correspondence “omit all vowels except when initial, which makes the reading of a banker’s letter a task of some difficulty.” It is unclear how the convention of omitting subordinate vowel signs originated. In Semitic languages, short vowels are generally predictable from the overall form of a written word, including the position and nature of long vowels represented by *matres lectionis* consonant letters; only rarely must the reader rely purely on context to determine the vowel. In Indo-Aryan languages, which lack Semitic root-and-pattern morphology (except for loanwords), these kinds of systematic word-internal dependencies are not available as an aid to decoding written sequences: determining the pronunciation of a written sequence places a much greater burden on a reader to match it directly to a specific lexical item. As a result, an Indo-Aryan language written in Perso-Arabic script (e.g., Urdu) is less transparent for the reader than if written in a typical Brahmic script where all vowels can be read directly off the written representation (e.g., Hindi in Devanagari). The fact that phonologically transparent Devanagari developed into quasi-abjads that underspecified vowels results in a structure suboptimal for readers: the most plausible reason is the desire for a “quick and dirty” intimate-register shorthand inaccessible to outsiders but easy for the writer to decode by using context. It is possible that this development appeared spontaneously, however the fact that such mercantile shorthands are only attested from northern India leads to the hypothesis that Perso-Arabic script, used preponderantly in North India to write Persian and Urdu, might have served as a model. This hypothesis gains further support from the existence of similar *Laṇḍā* quasi-

	Devanagari		— Gujarati —			— Kaithi —			Mahajani/ Baniauṭi		Moḍi		— Sourashtra —		SSP	Philippine	Bugis-	Batak	South Sumatran	
	(handwritten)	Early	19C	20C	A	B	C			A	B	Hālivi	Rao	Modern	proto-script	scripts	Makassarese	scripts	scripts	
k	ककककक	ક	ક	ક	क	क	क	क	क	क	क	क	क	क	क	क	क	क	क	k
g	गगग	ગ	ગ	ગ	ग	ग	ग	ग	ग	ग	ग	ग	ग	ग	ग	ग	ग	ग	ग	g
c	चचच	ચ	ચ	ચ	च	च	च	च	च	च	च	च	च	च	च	च	च	च	च	c
j	जजज	જ	જ	જ	ज	ज	ज	ज	ज	ज	ज	ज	ज	ज	ज	ज	ज	ज	ज	j
ṅ	ञ	ઞ	ઞ	ઞ	ञ	ञ	ञ	ञ	ञ	ञ	ञ	ञ	ञ	ञ	ञ	ञ	ञ	ञ	ञ	ṅ
ṇ	णण	ણ	ણ	ણ	ण	ण	ण	ण	ण	ण	ण	ण	ण	ण	ण	ण	ण	ण	ण	ṇ
t	ततत	ત	ત	ત	त	त	त	त	त	त	त	त	त	त	त	त	त	त	त	t
d	ददद	દ	દ	દ	द	द	द	द	द	द	द	द	द	द	द	द	द	द	द	d
n	नननन	ન	ન	ન	न	न	न	न	न	न	न	न	न	न	न	न	न	न	न	n
p	पपप	પ	પ	પ	प	प	प	प	प	प	प	प	प	प	प	प	प	प	प	p
b	बबबब	બ	બ	બ	ब	ब	ब	ब	ब	ब	ब	ब	ब	ब	ब	ब	ब	ब	ब	b
m	मममम	મ	મ	મ	म	म	म	म	म	म	म	म	म	म	म	म	म	म	म	m
y	यययय	ય	ય	ય	य	य	य	य	य	य	य	य	य	य	य	य	य	य	य	y
r	रररर	ર	ર	ર	र	र	र	र	र	र	र	र	र	र	र	र	र	र	र	r
l	लललल	લ	લ	લ	ल	ल	ल	ल	ल	ल	ल	ल	ल	ल	ल	ल	ल	ल	ल	l
v	वववव	વ	વ	વ	व	व	व	व	व	व	व	व	व	व	व	व	व	व	व	v
h	हहहह	હ	હ	હ	ह	ह	ह	ह	ह	ह	ह	ह	ह	ह	ह	ह	ह	ह	ह	h
s	सससस	સ	સ	સ	स	स	स	स	स	स	स	स	स	स	स	स	स	स	स	s

Figure 1. Comparisons of shapes for consonant letters occurring in each script.

abjads used in Punjab, belonging to the Śāradā branch of the Brahmic scripts (Leitner, 1882): that quasi-abjads developed from two distinct classic alphasyllabic/abugida scripts, only in regions where Perso-Arabic script was widespread, seems to indicate related innovations due to stimulus diffusion.

Gujarati script and Kaithi, used for more formal purposes, continued to use dependent vowel signs. Like the mercantile scripts, these semi-formal scripts dropped most of the conjunct forms typical of Devanagari script. With the loss of metrically weak short /a/, the convention of reading base consonant graphemes with a default /a/ evolved to ambiguity between C+/a/ and C+Ø readings: the choice between the two depended on the reader's knowledge of phonotactic and morphological structure and possible readings in a given context. An example of this can be seen in a grammar of English translated into Gujarati (Bahramjee, 1822), where clusters in both Gujarati and English are represented by simple sequences of unmodified consonant letters. In this text, English examples such as *orthography*, *diphthong* and *triphthong* are rendered as <આરથોગરૈફી> (<ā r thō g rai phī>), <ડીપથંગ> (<ḍī p thā g>), and <ટ્રીપથંગ> (<ṭ rī p thā g>), with separate individual letters as opposed to modern spelling where coda /r/ is represented by a *repha* hook above the following akshara as in <ār thō> (<આરથો>), and postconsonantal onset /r/ is represented by graphic variants of a diacritic conjunct as in <trī> (<ટ્રી>) or <gre> (<ગ્રે>).

Gujarati script gradually readopted certain features from Devanagari, including on the one hand a more archaic, formal shape for some letters and, on the other, the reincorporation of conjuncts and several letters that had fallen out of use. These changes can be attributed to its coexistence in a biscriptal situation with the prestige script Devanagari. Grierson (1908) mentions that the first books in Gujarati were printed in Devanagari; as Gujarati typefaces began to replace Devanagari, more formal and prestigious Devanagari features reappeared in Gujarati script.

On the other hand, the mercantile scripts were never used for formal registers and remained confined to quotidian purposes. In the following sections, we will examine how these scripts were adapted to represent vowels once they were introduced to regions where Devanagari was absent.

SOURASHTRAN SCRIPTS

The contemporary Sourashtra script, together with some samples of earlier varieties, is described in Krishnamoorthy and Everson (2002). Randle (1944) briefly describes the Sourashtran language and evidence for the Sourashtrians' northwestern origin, with samples of text in two distinct but related Sourashtran scripts. One, from Rāma Rāo (1902), is the

Figure 1 (Continued). Notes: Devanagari reproduced from Palmer and Pincott (1886); early Gujarati characters redrawn from illustrations in the Avestan Digital Archive (<http://www.avesta-archive.com>); Kaithi and Mahajani from Kellogg (1876) and Grierson (1881, 1903a, 1903b); Moḍi from Grierson (1905) and Hemadree font by Somesh Bartakke; Sourashtra reproduced from Hāḷivi (1880), Rāma Rāo (1902) and modern Suresh font by Suresh Thimma Ramdas. Philippine shapes from Archivo de la Universidad de Santo Tomas; Batak script from computer font by Ulrich Kozok and author's hand reproductions of certain variant shapes in Kozok (1996); South Sumatran shapes from Marsden (1834), Van der Tuuk (1868), and Westenek (1922); Bugis from MPH 2B Damase font by Mark Williamson and author's hand drawings of older variant shapes illustrated in Noorduy (1993) and Tol (2006, 2008). Sourashtra reproduced from Hāḷivi (1880), Rāma Rāo (1902) and modern Suresh font by Suresh Thimma Ramdas; 14th-century Tamil from Burnell (1878); modern Devanagari, Tamil and Telugu from computer fonts. 10th-century Kawi hand-drawn after Postma (1992); 14th-century Kawi after Kozok (2004). Batak script from computer font by Ulrich Kozok; Kerinci from Westenek (1922) and redrawn from Voorhoeve (1970); Rejang-Central Malay from Marsden (1834), Lampung from Van der Tuuk (1868); Bugis-Makassarese from MPH 2B Damase font by Mark Williamson; Philippine script from Anonymous (1593).

forerunner of the modern script. A second, from Hāḷivi (1880), uses a very different script with many characters conjoined in sequence. Despite their very different appearance and structure, a number of letters are similar or identical across the two scripts.

The characters from the two text samples were extracted individually using Randle's transliterations, and though neither text contained a complete character set, enough were available to compare with North-Indian scripts in [Figure 1](#). This comparison shows clearly that the two earlier varieties developed from informal North-Indian descendants of Devanagari. Some letter shapes are little different from early Gujarati or Mahajani shapes; others are directly related to Moḍi shapes, including the general Moḍi tendency for the body of certain letters to join the stem at the bottom. In some cases, one or the other of the Sourashtran variants is closer to more conservative shapes found in other North Indian scripts than to the Moḍi shape. We can conclude from this that the Sourashtran scripts and Moḍi all appear to descend from an earlier post-Devanagari script distinct from the Gujarati-Kaithi-Mahajani varieties. It is plausible to assume that their common ancestor first developed its particular characteristics in Maharashtra. Indeed, linguistic and historical evidence from Randle supports this hypothesis, with a southward migration occurring between the 13th and 16th centuries.

Although the three Sourashtran script varieties differ as to the vowel signs they use, the shape and position of these signs is either entirely or nearly entirely unrelated to the Devanagari set (used also in Kaithi, Sylhet Nagari and Gujarati, and with some adaptations, in Moḍi) (see [Figure 2](#)). The vowel signs in the two oldest varieties seem to be largely (albeit loosely) based on borrowings from Tamil and Telugu-Kannada scripts. The Hāḷivi (1880) and Rāma Rāo (1902) scripts each show separate influences from Telugu-Kannada and Tamil (cursive variants), though the individual influences are most often distinct. An interesting feature of Rāo's inventory is the use of conjunct shapes for various consonant letters. Although the details of their shapes are clearly derived from Devanagari antecedents, their general form—a rising tail—is clearly inspired by the form of Kannada-Telugu conjunct letters.

The question is why the Sourashtran varieties borrowed from South-Indian scripts rather than use the standard Devanagari inventory as in the north. A clue comes from the shapes of Sourashtran letters, which overall correspond most directly to the informal shapes of post-Devanagari mercantile varieties. If the informal shapes of the letters are typical of a mercantile variety, then it stands to reason that the early informal Maharashtra script that was brought to Tamil country originated as a quasi-abjad shorthand. Once it was used for more formal purposes, the lack of vowel signs, though appropriate for an intimate-register shorthand, would have conflicted with the desideratum of easy legibility and avoidance of ambiguity in more formal text registers. Hence the pressure to borrow vowel signs from the neighbouring Telugu and Tamil scripts. In the move from intimate or casual to consultative and formal registers, the sociolinguistic context of use determined whether the orthographic ambiguity was important enough to motivate adding vowel signs to the script.

INDONESIA AND THE PHILIPPINES

Of the Indic scripts of Indonesia and the Philippines, the best-known are the modern Javanese-Balinese and Sundanese scripts, concentrated like their ancestor, Old Javanese or Kawi, in Java, Bali and southern Sumatra. The origins of other scripts in North and South Sumatra, South Sulawesi, Sumbawa and Flores, and in the Philippines, were long uncertain; it was generally assumed their ancestor was Kawi, cf. Holle (1882, 1999) and Kern (1882). This question has been re-examined recently using previously unconsulted

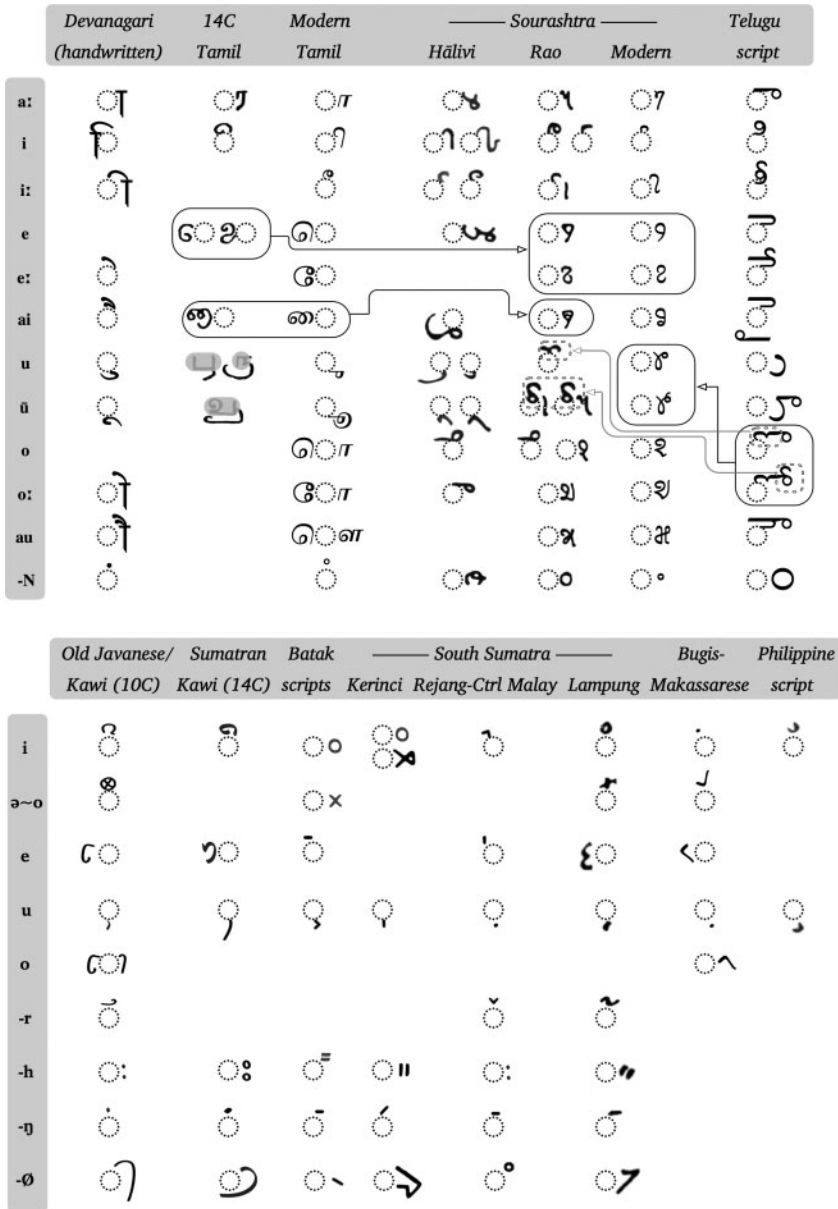


Figure 2. Origins of dependent vowel and coda consonant signs in Sourashtran and SSP scripts.

sources, including archival records of 17th-century handwriting in the Philippine script. Based on global cross-script similarities between letters for similar phonemes, Wade (1993) suggests that Philippine scripts may have developed from Cham varieties of Vietnam and Cambodia. Miller (2012, in press) establishes systematic structural correspondences, based partly in the biomechanics of handwriting, between elements of the internal structure of Philippine letters and their counterparts in Devanagari and Gujarati on the one hand, and the Sumatran and Sulawesi scripts on the other.

Figure 1 compares the letter inventories of these scripts to their Indian counterparts. Unlike the Javanese group, the Sumatra-Sulawesi-Philippine (henceforth SSP) scripts only

have letters for their indigenous sound systems and lack letters for aspirated and retroflex consonants as well as <ç>, <e> and <o>. Informal Devanagari <ŋ> was adapted to Malay phonology to represent palatal <ɲ> while Devanagari <ɲ> was used for <ŋ>. The proto-SSP <ɲ>, with a shape nearly identical to Devanagari <ŋ>, appears to have been adopted in the Philippines as a rarer variant of <n> (cf. the circled letters in the Philippines column of Figure 1).

The oldest attestations for any of these scripts come from the late 16th- and early 17th-century Philippines, where the letter shapes show direct and systematic correspondences to North-Indian scripts, in particular early informal Gujarati. The most regular correspondence is the presence of a short downward tail (or an upwards counterclockwise curl for and <w>) as a reduction of the Devanagari stem. For the most part, the headstroke reduced to an initial tick, but it is fully present on <t>, <d>, <n> and <l>. The Sulawesi and Sumatran scripts can be derived systematically from reconstructed intermediate SSP proto-script shapes, with certain idiosyncratic but minor changes present in each individual script.

Although the base letters of the SSP scripts seem clearly to descend from an early informal descendant of Devanagari, the vowel and coda consonant signs just as clearly descend not from Devanagari, but from Kawi (see Figure 2).

As with the Sourashtra scripts, the likely explanation is that the script originated as a quasi-abjad introduced to Sumatra by Gujarati merchants. When its use in consultative and formal registers made it desirable to represent postconsonantal vowels for better legibility, the vowel sign system of Kawi (already present in Sumatra) was borrowed wholesale, together with coda consonant signs, which have survived in North and South Sumatra in a somewhat changed form. The only parts of the Kawi vowel-coda system not adopted were subscript conjunct consonant letters; instead, the Kawi zero-vowel sign (and later on in South Sumatra, the equivalent Arabic *sukūn/jazma*) was used to mark all vowelless consonants. A separate series of derived prenasalised consonant letters were developed in South Sumatra and eventually adopted in slightly different form in South Sulawesi.

Similar circumstances appear to have led to similar solutions in South India and Sumatra, but as the SSP proto-script spread northward and southward in Sumatra, and eastward to Sulawesi and thence to the Philippines, other, sometimes quite puzzling, changes took place in the spelling of vowels and coda consonants. These are described and explained in the following sections.

SUMATRA: BATAK, KERINCI, REJANG-CENTRAL-MALAY AND LAMPUNG

Among the scripts of Sumatra and Sulawesi, Batak varieties show the most immediate resemblances to the Philippine and proto-script shapes. Overall, the major differences are of two types. Where a complex set of strokes precedes the tail in the proto-script, Batak reduces the tail to a minimum, cf. <s> or <ɲ> in Figure 1, but where only minimal structure precedes the tail, Batak extends it clockwise, cf. <h> and <t>. Initial clockwise curls in the proto-script are reduced either to more horizontal, shallow curves or, as in <m> and <ŋ>, eliminated completely, leaving only a sloping remnant.

Though the distorted, angular appearance of the South Sumatran scripts renders them somewhat less obvious, it is also possible to discern regular relationships in shape with their proto-script counterparts and relatives in the other scripts.

The Batak scripts and the Lampung and Kerinci varieties of the south share two types of unusual orthographic displacement rules (see Figure 3). One, described by Van der Tuuk (1855, 1971) in Batak and Van der Tuuk (1868) in Lampung, affects the position of a

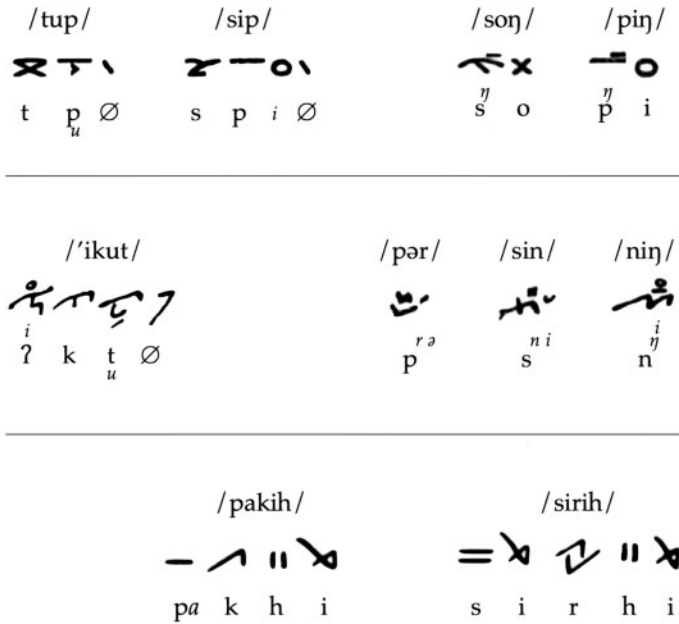


Figure 3. Vowel sign displacement in Sumatran scripts. Top: Batak script, Van der Tuuk (1855, 1971); middle: Lampung script, Van der Tuuk (1868); bottom: Kerinci script, Westenenk (1922).

vowel sign preceding a consonant marked with the zero-vowel sign. Instead of appearing on the base consonant letter representing the syllable onset, the vowel sign migrates rightward to appear on the consonant letter marked as a coda with the zero-vowel sign. In Lampung, the <-u> vowel sign is marked right on the letter, as in the word *ikut*. The same thing happens in *tup* in Batak orthography. However, the <-i> sign has migrated over time to a separate space to the right of its host letter, and as a result of this orthographic displacement it appears not on the coda consonant letter but to its right, just preceding the zero-vowel sign.

A second displacement convention reorders a vowel sign outside the sign for a coda consonant. This occurs in central Sumatran Kerinci orthography as well as Batak and Lampung. Thus, in Mandailing Batak, the vowel sign appears to the right of the base letter while the coda consonant sign <-ŋ> appears above the letter itself. (In Karo Batak, further north, the coda consonant sign has been reordered so it is placed above the vowel sign to the right of the base letter.) In Lampung, the coda consonant signs <-r>, <-n> and <-ŋ> are written closer to the base letter than the vowel, which appears either to the right or above the coda consonant sign. Similarly, in Kerinci, where <-i> and <-h> are both written in an independent space to the right of the base letter, <-i> must be written to the right of <-h>.

That the same pair of counterintuitive displacement rules appear in orthographies associated with scripts of vastly different appearance, at opposite ends of Sumatra, leads to the hypothesis that they must have spread north and south from a common ancestor. An intriguing indication of their likely origin comes from Van Hasselt (1881), echoed in Marsden's (1834) similar but sketchier description for Kerinci. Van Hasselt recounts how teachers in Southern Sumatra would combine a given base consonant letter in a block together with a coda consonant sign and several vowel signs, and students would recite the combinations, first giving the base letter's pronunciation, then the added coda consonant sign and the resulting syllable, and then, in sequence, each added vowel sign and the corresponding syllable with the changed vowel.

Thus learners recited the stacked combination $\langle^i k_u^r \rangle$ (where the superscripts and subscripts reproduce the approximate positions of the corresponding signs) as “/ka/, *kejungjung* /kar/, *keluan* /kir/, *kebitan* /kur/” (corresponding in sequence to the written subsets $\langle k \rangle + \langle^r \rangle = \langle k^r \rangle$; $\langle^i \rangle = \langle^i k^r \rangle$; $\langle_{-u} \rangle = \langle k_u^r \rangle$). Similarly, $\langle^i k_u^n \rangle$ would be recited as “/ka/, *duwa di atas* (two above) /kan/, *keluan* /kin/, *kebitan* /kun/” ($\langle k \rangle + \langle^n \rangle = \langle k^n \rangle$; $\langle^i \rangle = \langle^i k^n \rangle$; $\langle_{-u} \rangle = \langle k_u^n \rangle$, and $\langle^i k_u^n \rangle$ as “ka, *ketulang* /kan/, *keluan* /kin/, *kebitan* /kun/” ($\langle k \rangle + \langle^n \rangle = \langle k^n \rangle$; $\langle^i \rangle = \langle^i k^n \rangle$; $\langle_{-u} \rangle = \langle k_u^n \rangle$).

Some of the signs' shapes had changed in this late-1880s version of the script; the attached hook shape for $\langle^i \rangle$ was originally a circle above the letter as it still is in Lampung (see [Figures 2 and 3](#)). If the combinations of dependent coda consonant and vowel signs are recited in the same manner, but stacking the signs as in the (more conservative) Lampung example in [Figure 3](#), the vowel sign will naturally be written in sequence after the coda consonant sign, thus farther away from the letter. This would also naturally affect the sign for $\langle^o \rangle$, a superscript ‘x’ shape, which represented /o/ in some Batak languages. The puzzling fact that the coda consonant sign $\langle^n \rangle$ is written on the onset consonant letter while $\langle^i \rangle$ and $\langle^o \rangle$ appear to the right of the onset-coda combination (see [Figure 3](#)) is explained by an earlier stage similar to Lampung, after which $\langle^i \rangle$ and $\langle^o \rangle$ moved rightward (by a process of distal drift) from a position above the base consonant letter; a similar explanation holds for Kerinci, where both the $\langle^i \rangle$ vowel and $\langle^h \rangle$ coda signs shifted to the right of the base consonant letter.

A variation of this didactic practice, for consonants marked as codas with a following zero-vowel sign, leads to similar results. The word *daw* (one) in the Upper Rawas region of southern Sumatra was written with the linear equivalent of $\langle dw\emptyset \rangle$. This was then recited by the student as “/da/, *membunuh* (kill) /wa/: /daw/” ($\langle d \rangle + \langle w\emptyset \rangle = \langle dw\emptyset \rangle$). The “killed”, i.e., vowelless, consonant letter and the “killer” zero-vowel sign were not recited as distinct graphemes $\langle w \rangle + \langle \emptyset \rangle$ “/wa/, *tanda bunuh* (killing sign)” but were treated as a unit, analogous to $\langle^r \rangle$ or $\langle^n \rangle$ written above an onset letter. When a further sign was added to represent a vowel other than default /a/, as in the case of *num* (six), spelt $\langle n_u m\emptyset \rangle$, the student would recite “/na/, *membunuh* /ma/: /nam/; *kebitan*: /num/” ($\langle n \rangle + \langle m\emptyset \rangle = \langle n m\emptyset \rangle$; $\langle_{-u} \rangle = \langle n_u m\emptyset \rangle$).

As in the case described earlier, where the dependent coda consonant sign was recited before adding the appropriate vowel sign(s), here the separate coda letter plus zero-vowel sign is recited before adding the vowel sign. In both cases, the logical assumption that the vowel sign would be written on the onset consonant letter itself (as illustrated in Van Hasselt's description) appears to have changed, under influence from the order of the recitation itself, to the assumption that the vowel sign would be written on the coda-marked consonant letter instead. These changes appear to have occurred not inland where Van Hasselt's examples originated, but on the east coast itself, from where the new displacement rules would have spread southward to the Lampung, northwest to Kerinci, and northward to Batak.

SULAWESI AND THE PHILIPPINES

Although Bugis-Makassarese (henceforth BM) letter shapes from South Sulawesi are for the most part systematic simplifications of their Philippine counterparts, two main types of evidence show that Philippine script was almost certainly adopted from Sulawesi. First, BM contains $\langle c \rangle$, $\langle j \rangle$ and $\langle r \rangle$ letters, which have no Philippine counterparts: prior to borrowing from Spanish and English, Tagalog and many other Philippine languages lacked the corresponding distinctive phonemes, unlike Bugis and Makassarese (see [Figure 1](#)).

Second, in both the Philippines (but for an exception discussed below) and Sulawesi, coda consonants are not spelt. This is a poor match for Philippine languages, where nearly any consonant can be a coda. However, in South Sulawesi languages, coda consonants are limited to a velar nasal or glottal stop word-finally, and a homorganic nasal, glottal stop or first half of a geminate word-internally. Since the choice in any position is between one of two possible consonants or zero, the coda consonant can be unspecified without excessive ambiguity: hence the motivation for their omission.

The Philippines and Sulawesi share a convention whereby two adjacent syllables with the same onset consonant can be abbreviated by combining the two syllables' vowel signs on a single occurrence of the consonant letter.

This is common in Sulawesi, in the orthographies both of BM script and Makassarese *Jangang-jangang* (bird) script; examples of the latter are the names Popo² (written <poo> with two <-o> vowel signs to the right of a single letter <p>), and Ka[runru] where the final two syllables (enclosed in braces to identify the location of the abbreviation) are abbreviated <k [r_{uu}]> with a doubled <-u> vowel sign on a single <r> onset letter.

In the Philippines, examples are only known from three different hands, including contrasting signatures from one Don Agustin Tiwalag, one abbreviated and the other written out in full, and three signatures by one Don Dionisyo Capulong (see [Figure 4](#)), two

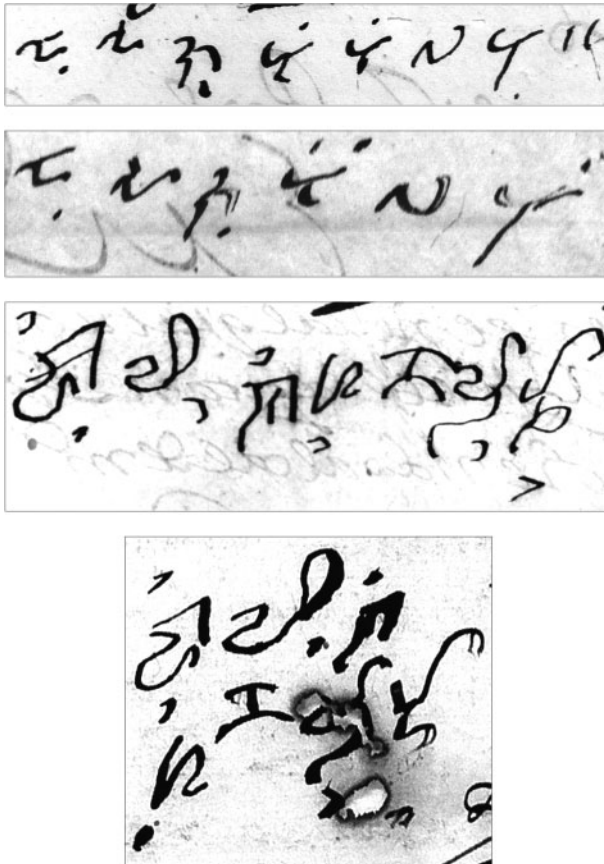


Figure 4. Don Agus[tin Ti]walag <d_u a g_u [t̪ t̪] w l> (without vowel sign doubling); <d_u a g_u [t̪ t̪] w l> (with vowel sign doubling); [Don Di]onisiyo Capulong <[d̪ d̪] y_u n̪ s_u k p_u l_u> Archivo de la Universidad de Santo Tomas; photograph © Christopher Miller.

of which are reproduced here to illustrate the <ⁱd_u> combination for “Don Di...” at top left in each image; the rest of the name proceeds to the right in the first but in the second it breaks after <ⁱn> to a new line beginning with <s_u> at bottom left.

Don Agustin Tiwalag’s signature shows how this abbreviation could cross word boundaries, a phenomenon also found in a land deed where *nitóng tubigán* (of this irrigated land) is written as <ⁱn [t_{uu}] ⁱb g>.

This convention appears to derive from a didactic practice exemplified in the first text printed in the Philippine script (Wolf, 2005), where <ⁱ> and <_u> are combined with each consonant letter:

< a u i ⁱh_u ⁱp_u ⁱk_u ⁱs_u ⁱl_u ⁱt_u ⁱn_u ⁱb_u ⁱm_u ⁱg_u ⁱd_u ⁱy_u ⁱŋ_u ⁱw_u >

Conklin (1991 [2007]) describes a similar practice among the Tagbánuwá of Palawan: each letter and accompanying vowel sign is pointed to in sequence, and the combinations are chanted in a jingle, “laŋláyly[?] laŋláyly[?], maŋmáymu[?] maŋmáymu[?]” for the first two consonants in order and so on until the final letter “wawá[?]”, which bears no vowel signs.

It is surprising that the chant uses these relatively complex made-up words rather than a simple “la li lu”. A clue to their possible origin comes from Marsden (1834) describing the BM script: “The whole of the signs are, by the native teachers, thus combined: <-e ⁱt_u -o >”. Reading these off the base letter left to right and clockwise and starting with the bare letter supplied with default /a/, one plausible sequence for the letter <t> he illustrates would be /ta te ti tə to tu/. For a person reading the combined vowels off each consonant in turn, it is a simple step to generalise this to combining different and then similar vowel signs on a single consonant to be read off in turn, this time as an abbreviation. Supplying syllable-final glottal stops and velar nasals to the basic /ta te ti tə to tu/ sequence in line with Bugis and Makassarese phonology might explain the presence of these sounds in the Tagbánuwá recitation in the Philippines.

Although the Sulawesi convention of not spelling coda consonants was adopted in the Philippines, there are indications from the early 1600s that users in Pampanga province northwest of Manila had begun to develop certain conventions to write them overtly. The evidence for these innovations is sparse: signatures in five different hands from three different sources. Nonetheless, the conventions are consistent: word-internally a coda consonant is represented by an unpronounced <-i> vowel sign (except for several cases where the coda is identical or very similar to the following onset), and name-finally a coda consonant is written with the bare letter pronounced without /a/, cf. Isabel Pangisnawan <ⁱy s_a ⁱb ⁽ⁱ⁾l p_a ⁱŋ ⁽ⁱ⁾s n_a w_a n> and Pablo Maniwad <p_a ⁽ⁱ⁾b l_u m_a ⁱn w_a d>, where subscript <_a> represents a pronounced /a/ and <⁽ⁱ⁾> between parentheses indicates a silent orthographic <-i>.

The development of these coda-spelling conventions is analogous to the way Sourashtran scripts and the SSP proto-script borrowed vowel signs from neighbouring scripts: in both cases, everyday use of a script that underrepresented part of the phonological string motivated appropriate additions. Non-native users of Philippine script varieties have proposed various zero-vowel signs to map the written string more transparently onto the intended phonological sequence, but the only such innovation adopted by a native script-using community has been in Mindoro. The Pampanga case is different: here, it is native users of the script who adapted existing resources to new purposes. Any potential ambiguity in readings (/i/ versus zero; zero versus /a/) was minimal compared to determining, in the original coda-less variety of the script, whether to supply a coda consonant and if so, which one to supply.

CONCLUSION

This paper has brought to light several facets of the development from early Devanagari of several North Indian scripts, two South Indian Sourashtran scripts, and scripts of Sumatra, Sulawesi and the Philippines. Although this paper's scope does not permit a detailed and in-depth demonstration of their relationships, structural correspondences for Devanagari, Gujarati and the Sumatra-Sulawesi-Philippine (SSP) scripts are treated systematically in Miller (*in press*, 2012).

The systematic correspondence between cognate letters is striking. No less striking is the absence of vowel marking in the orthographies of informal mercantile scripts of North India and the use in the Sourashtran and SSP scripts of vowel/coda consonant sign inventories borrowed directly or indirectly from distantly related neighbouring scripts. These facts are accounted for by the transmission of quasi-abjad varieties to southern India during the Sourashtran migration and to southeastern Sumatra by Gujarati traders: when the quasi-abjads entered more general use, there was an incentive to supplement them with vowel and coda consonant signs from neighbouring scripts. Where the ambiguity of the original scripts' orthographies was tolerable and perhaps even desirable for the intimate register contexts of commercial records and notes, it was undesirable in the more consultative and formal low-context registers where easy reading by others is more highly valued.

In an analogous context, the inherited script's orthography did not represent the rich set of coda consonants in Philippine languages due to the syllable structure of South Sulawesi languages from which it was transmitted. Though coda-less writing persisted into this century in two south-western islands, script users in the Philippine province of Pampanga began to innovate conventions for writing coda consonants by the early 1600s, approximately one to two centuries after the arrival of the script in Luzon. It is puzzling that this did not occur elsewhere in the Philippines, but the absence of another Indic script with the requisite borrowable features may be part of the explanation: inherently capable of writing final consonants, Latin script and orthography quickly replaced Philippine script everywhere but among two isolated highland groups.

Sociolinguistic practices also led to orthographic changes in the usage of SSP scripts: combining different vowel (and coda consonant) signs on onset letters for teaching purposes yielded a conventional abbreviation in Sulawesi and the Philippines, and conventions displacing a vowel sign onto or after the written coda consonant in Sumatra.

This results in new akshara forms different from the usual Indic (Cⁿ)V(-C) template. The Sulawesi-Philippine abbreviation creates a disyllabic akshara that can straddle word boundaries, with separate nuclei represented on a single shared onset consonant letter. The Sumatran displacement convention creates a dependency between the onset consonant letter and the overt marking of the coda, where the coda sign is the only cue that the bare onset letter is read not with default /a/ but with the vowel sign adjacent to the coda grapheme.

Despite their dissimilarity to conventions used with other Indic scripts, both innovations emerge from the primordial functional split between base consonant letters and dependent vowel/coda consonant signs in Indic scripts. This split permits non-iconic graphic orders within a cohesive orthographic syllable unit; innovative conventions can thus manipulate combinations of base and dependent graphemes, giving rise to new realisations of the basic combinatorial unit, the akshara.

SUPPLEMENTARY MATERIAL

Supplementary Figures 1–7 are available via the ‘Supplementary’ tab on the article’s online page (<http://dx.doi.org/10.1080/17586801.2013.857288.2013.PWSR857288>).

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